

REMARKS

Applicant acknowledges receipt of an Office Action dated November 27, 2006. Claims 1-12 remain pending in the application.

Applicant respectfully requests reconsideration of the present application in view of the reasons that follow.

Rejection Under 35 U.S.C. §102/§103

On page 2 of the Office Action, the PTO has rejected claims 1-4 and 8-12 under 35 U.S.C. §102(a) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent 6,584,034 to Takamura *et al.* (hereafter "Takamura") in view of U.S. Patent 5,364,984 to Arntz *et al.* (hereafter "Arntz"). Applicant respectfully traverses this rejection for the reasons set forth below.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP §2131.

Alternatively, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, Takamura and Arntz each fail to disclose and, in the context of the alternative §103 rejection, collectively fail to teach, or suggest a method wherein "a carbon monoxide adsorption amount is adjusted from 0.1 to 3 mL/cat.g" as recited in independent claims 1 and 12.

On page 2 of the Office Action, the PTO stated that "Takamura does not discuss the CO adsorption amount. It appears possessed since some examples use 1% Pt, which is

exactly the amount used by most of the examples of the present specification. Also, Arntz '984 discloses a platinum metal catalyst with CO adsorption of 0.5 to 1.6 ml of CO/g of catalyst It can be seen from the amount of Pt and the capacity of Arntz that the catalyst Takamura is expected to meet this limitation".

Applicant, however, wishes to direct the PTO's attention to a translation from the Encyclopedia of Catalyst (November 1, 2000) a copy of which is being provided concurrently herewith. The Encyclopedia of Catalyst describes the measurement of the diameter of metallic particles by measuring an amount of adsorbed gas per unit weight of a supported metal catalyst. The total number of surface metal atoms is calculated from the number of gas molecules adsorbed to one surface metal atom. From this value, the dispersity and average particle size of the metal can be calculated. The gas molecule is generally hydrogen but is carbon monoxide in some cases.

Thus, the CO adsorption amount relates to the total number of surface metal atoms, and, in fact, the dispersity, *i.e.* the average particle size and the surface area of the metal.

Accordingly, even if the Pt amounts of Takamura and Arntz are the same as those of the examples of the present specification, the CO adsorption amounts of Takamura and Arntz are different from those of pending claims 1 and 12 since the dispersity, the average particle size and the surface area of the metal of Takamura and Arntz are different than those of the metal of the presently claimed invention. Accordingly, Takamura and Arntz cannot disclose, teach or suggest the feature "a carbon monoxide adsorption amount is adjusted from 0.1 to 3 mL/cat.g" of the pending claims 1 and 12.

Moreover, if the PTO is relying on Takamura as the basis for an inherent anticipation rejection under §102 and on Arntz to provide evidence supporting an inherency theory, Applicants note that (i) Arntz does not provide any such evidence and (ii) the PTO has provided no nexus between Arntz and Takamura.

With respect to the alternative rejection under §103, Applicant notes that it appears that the PTO has withdrawn the rejections set forth in the previous Office Action in favor of the rejections set forth in the current office Action. With respect to the §103 rejection that is part of the current §102/§103 rejection, it appears that the PTO is relying on the doctrine of inherency in the context of an obviousness rejection, *i.e.* that the PTO is suggesting that the features missing from Takamura are inherently present and that Arntz provides evidence that

the features are inherently present. Applicant notes that it is impermissible to rely on the doctrine of inherency in the context of an obviousness rejection inasmuch as inherency can be said to be the antithesis of obviousness. Applicant further notes, that, in any event, Arntz' disclosure fails to resolve the deficiencies in Takamura.

Further, and for the reasons discussed in more detail under the heading "Rejections Under §103" below, Applicant submits that a person of ordinary skill in the art would not have combined Takamura and Arntz because the disclosures are related to widely divergent technology areas and that a person of ordinary skill in the art would have no reasonable expectation of success based upon any combination of Takamura and Arntz.

For these reasons, Applicant submits that the outstanding rejection based upon Takamura is improper and ought to be withdrawn. Since claims 2-4 and 8-11 depend from independent claim 1, Applicant submits that they are allowable for the same reason as claim 1.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejection of claims 1-4 and 8-12 under §102/§103.

Rejections Under 35 U.S.C. §103

On page 3 of the Office Action, the PTO has rejected claims 1-5 and 8-12 under 35 U.S.C. §103(a) as allegedly being unpatentable over Takamura. In addition, on page 3 of the Office Action, the PTO has rejected claims 6 and 7 under 35 U.S.C. §103(a) as allegedly being unpatentable over Takamura in view of Arntz, and further in view of U.S. Patent 6,913,739 to Shore (hereafter "Shore").¹ Finally, the PTO has rejected claim 10 under 35 U.S.C. §103(a) as allegedly being unpatentable over Takamura in view of Arntz and further in view of U.S. Patent 3,584,608 to Shibagaki (hereafter "Shibagaki").² Applicant respectfully traverses these rejections for the reasons set forth below.

^{1,2} Applicant notes that the PTO has rejected claims 1-5 and 8-12 based upon Takamura alone but rejects claims 6, 7, and 10 based upon a base combination of Takamura and Arntz. Applicant is uncertain whether the PTO inadvertently failed to reference Arntz in the rejection of claims 1-5 and 8-12 or inadvertently referred to Arntz in the rejection of claims 6, 7, and 10. Applicant's remarks here are applicable to both interpretations. Applicant requests clarification in the next communication from the PTO.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

For the reasons discussed above, Applicant submits that neither Takamura nor Arntz, taken either individually or in combination, teach or suggest a method wherein "a carbon monoxide adsorption amount is adjusted from 0.1 to 3 mL/cat.g" as recited in independent claims 1 and 12."

In addition, it would not have been obvious to modify the process of Takamura by incorporating the teachings of Arntz because Takamura and Arntz are directed to widely divergent technologies, i.e. a process for reducing CO in hydrogen-containing gas and a process for the preparation of 1,3-propanediol. Specifically, the catalyst of Takamura functions as a CO concentration reducing catalyst which hardly reacts with hydrogen at all. In contrast, the catalyst of Arntz functions as a hydrogenation catalyst which accelerates a hydrogenation of an aldehyde. The function of the catalyst disclosed by Arntz is contrary to that of Takamura. Thus, it would not have been obvious to combine the teachings of Takamura and Arntz because such a modification would change the principle of operation of the process disclosed by Takamura. See M.P.E.P. § 2143.01.

Furthermore, one of ordinary skill would not have had a reasonable expectation of success in combining the two references because of the different functions of the processes of Takamura and Arntz. See M.P.E.P. § 2143.02.

Still further, one of ordinary skill would not have a reasonable expectation of success in combining Takamura and Arntz to make the presently claimed process because Arntz discloses an operating temperature of 60° C, which is lower than that recited by claims 1 and 12.

Furthermore, it would not have been obvious to one of ordinary skill to look to the teachings of Arntz when addressing the problem faced by the present Applicant, *i.e.* reducing

CO concentration in a mixed gas containing hydrogen, because the process of Arntz addresses the problem of contamination in a hydrogenation process by catalytic material and is in a different field of endeavor than the claimed process. Therefore, it would not have been obvious to combine the teachings of Takamura and Arntz to arrive at the process of present independent claims 1 or 12.

Finally, Applicant notes that the PTO is attempting to rely on the optimization of cause-effective variables to make up for deficiencies in the cited references. In this regard, Applicant notes that the PTO has failed to first establish (without relying upon Applicant's disclosure) that the variables are, in fact, cause effective. For this additional reason, Applicant submits that the outstanding rejections under §103 are deficient.

Shore and Shibagaki add nothing to resolve this fundamental deficiencies in the combination of Takamura and Arntz. Thus, Applicant submits that the outstanding rejection of independent claims 1 and 12 is improper and ought to be withdrawn.

Claims 2-11 depend from claim 1 and are believed to be allowable for at least the same reason as claim 1.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections under §103.

CONCLUSION

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By R.D.S.

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5414
Facsimile: (202) 672-5399

Richard L. Schwaab
Attorney for Applicant
Registration No. 25,479

Paul D. Strain
Attorney for Applicant
Registration No. 47,369